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A. Bryan Wade, B.Ch.D., F.D.S., G.C. Blake, M.B., B.S., F.D.S., J. D. Manson, B.Ch.D., D.S., Elisabeth G. B. Anderson and Margaret E. Arnold, B.D.S., I.D.S. A Comparative Assessment of Three Medicaments for the Treatment of Acute Ulcerative Gingivitis of the Vincent's Type. *British Dental Journal*, Vol. III, No. 8, Pages 280-285, Oct. 17, 1961.

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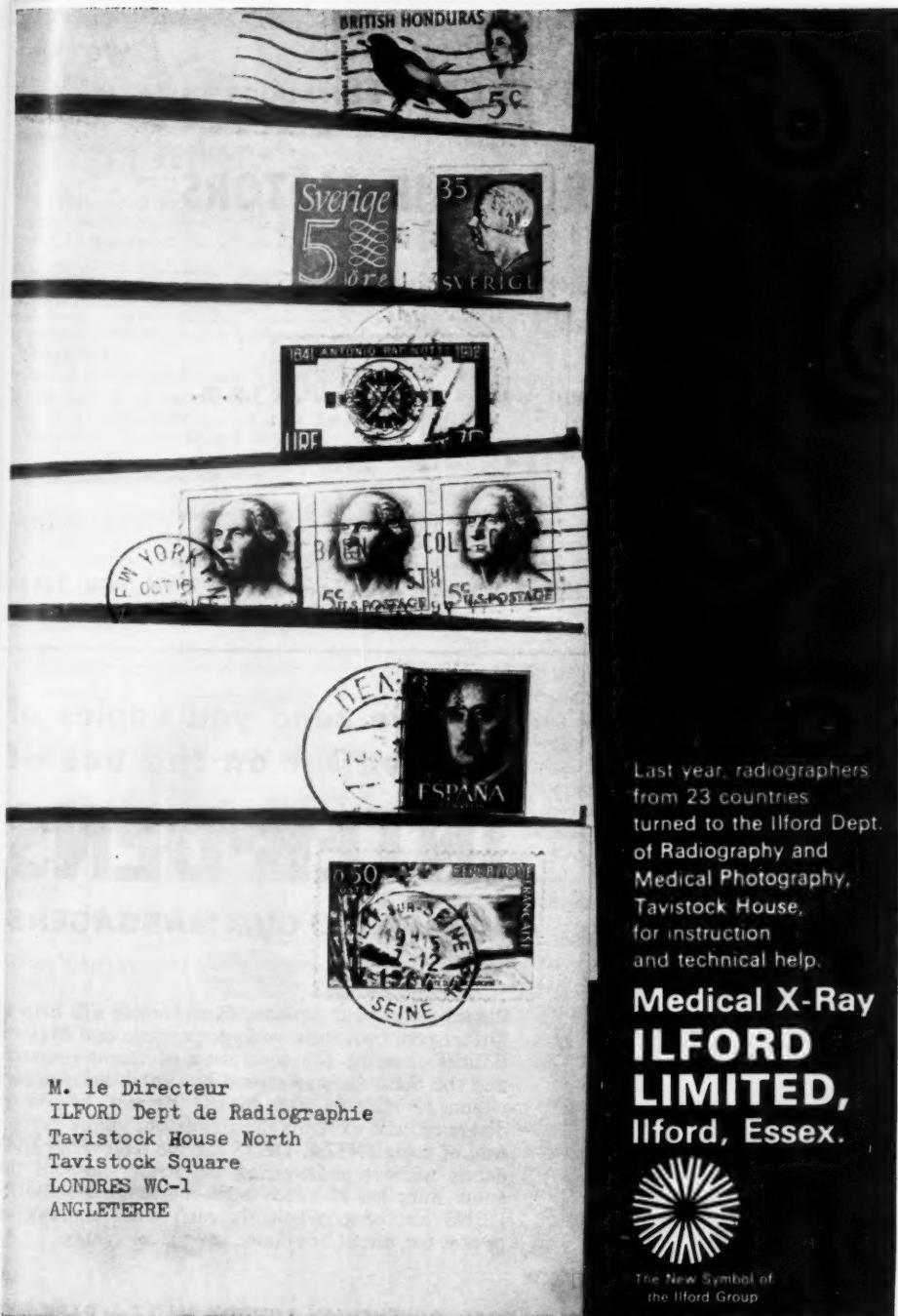
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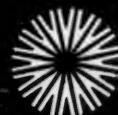




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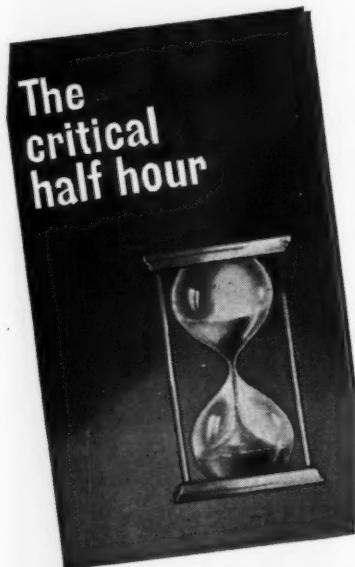
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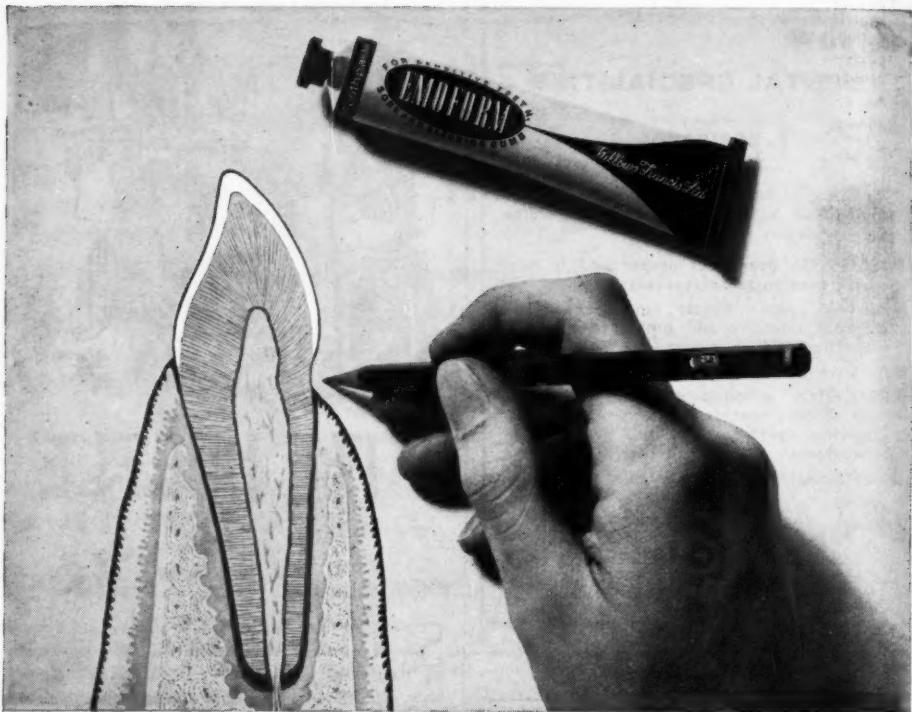
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The Use of Auxiliary Dental Personnel— With Special Reference To The Dental Hygienist*

Dr G. H. LEATHERMAN
D.M.D., F.D.S.R.C.S., D.Sc.

*Secretary General of the Federation Dentaire
Internationale*

THE development of dental practice over the past 100 years has made it obvious that the dentist of today, if he wishes to make full use of his special skills and knowledge, without loss of time, lowering of standards, and uneconomic practice, must employ auxiliary personnel. This applies particularly to the field of public health dentistry and enables the "dental team" consisting of a dental surgeon and one or more trained auxiliaries to provide more and better service of a high standard and on economical basis.

Let us face facts. Over the greater part of the world, the dentist/population ratio is high enough to indicate that there are insufficient dentists to take care of the dental health population. In fact, in every country in the world there would be a severe lack of dental manpower if treatment were based on need and not demand. It cannot be denied that the failure of the dental profession to delegate as many as possible of its routine tasks to auxiliaries, even with the current laws in existence in various countries, has markedly reduced the ability of the dental profession to fulfill its responsibilities as a health service.

In the social evolution through which the world's population is going, it would appear that the dental profession has failed to keep pace with its sister profession. Medicine makes use of many auxiliaries. Law has lost, or voluntarily relinquished, many duties that used to be its sole prerogative and the same may be said for architecture and accountancy.

Dentistry must adopt the team approach to promoting dental health for the people and care must be taken to differentiate between the needs of countries which have an established dental profession and those where there are few or no dentists at all. In the former, the profession fights to protect its rights and to prevent dilution; in the latter,

the problem is how to provide sufficient manpower trained to provide the minimum essential dental services for the population. Africa is an excellent example of the latter and the training and use of dental auxiliaries as well as dentists trained for public health services is a matter of extreme urgency.

The W.H.O. Expert Committee on Auxiliary Dental Personnel recognised the problem in their 1958 Report, and its proposals should be much more carefully studied than they apparently have been.

All United Nations Agencies have accepted the definition that an auxiliary worker is "a paid worker in a particular field with less than full professional qualifications in that field, who assists and is supervised by a professional worker".

In the study of auxiliary services in dentistry, I suggest we take the word "auxiliary" to connote all forms of subsidiary dental personnel who are of assistance to the dentist and work under his direction and supervision. (W.H.O. Expert Committee on Auxiliary Dental Personnel 1958).

To understand the development of the auxiliary in dentistry, one must consider the evolution of the dentist. Dr. M. M. Chaves, Chief Dental Health Officer, W.H.O., has identified five evolutionary stages, each with its own particular type of practice.

The fourth stage, that of practice by a qualified practitioner with three to six years of formal training at university level, produced with it recognition and organisation of the Dental Assistant and the Dental Laboratory Technician.

The final stage, the development of specialisation in practice brought with it the development of two further types of auxiliary, namely the New Zealand Dental Nurse trained to carry out curative procedures—fillings and extractions on children, usually under Government or Local Authority employment, and the Dental Hygienist trained to carry out preventive procedures and working both in the Public Health Service and private practice.

This lecture was given on the occasion of the 50th Anniversary of the Nederlandse Maatschappij tot Bevordering der Tandheelkunde June 1964.

Thus we have *two* auxiliaries who do not work in the mouth but assist the dentist in his work, the Dental Assistant and the Dental Laboratory Technician and *two* the Dental Nurse and Dental Hygienist who carry out treatment in the mouth as a substitute for the dentist but under his supervision.

The Fédération Dentaire Internationale has, through its Commission on Public Dental Health Services, given much time to defining nomenclature, duties and education of the Dental Assistant and the Dental Laboratory Technician, that is auxiliary personnel not giving curative care.

Regarding *Dental Assistants*, the Federation calls attention to the need for support of the following principles in developing the Dental Assistant as a member of the Dental Health Team:

1. In order to attract well qualified candidates to the field of dental assisting the Dental Assistant must be assured of standards of employment and remuneration which are consistent with social conditions in the country and with her status as a member of the Dental Health Team.
2. In order to ensure competence and status as a member of the Dental Health Team the Dental Assistant should be required to complete suitable education, training and examination in both theoretical and practical fields. Emphasis is placed on the need for formal training in both practice and theory and on the establishment of identifiable programmes for the Dental Assistant in both dental schools and other qualified institutions.

Programmes for the Dental Assistant should not be less than one academic year (nine or ten months) and such additional practical training as local conditions may require or suggest.

When local or regional conditions prevent attendance at organised programmes, courses may justifiably be given to Dental Assistants by mail.

Provision should also be made to enable the Dental Assistant to continue her education and training beyond the formal initial period.

3. The responsibility for the education and training of the Dental Assistant must rest with the dental profession consistent with the education and legal requirements of the country.

4. In order to utilise the Dental Assistant to greatest advantage dental students should be trained to work with Dental Assistants at a suitable time in their undergraduate curriculum.

It is of interest to note that approximately 60,000 Dental Assistants are employed in the United States—of this number approximately 12,000 belong to the American Dental Assistants' Association and some 3,500 new names are enrolled each year while an equal number fail to renew membership.

This turnover of nearly 30% indicates that dental assisting is not looked upon as a career but rather as temporary employment.

It is necessary by establishing proper courses, registration and control and opportunity for additional study, possibly leading to qualification as a dental nurse or dental hygienist, to add status and further inducement to career-minded young women.

The craft of the *Dental Laboratory Technician* is a comparatively young one and its development stems from the development of university courses and specialisation for the practice of dentistry.

Nils Sällström, the Director of the State School of Dental Technology, Gothenburg, Sweden, in his booklet "A Review of the Training of Laboratory Technicians", writes: "The line of demarcation between the work of the dentist and the dental technician was vague from the beginning. In most countries it took a long time before the laws and regulations were passed defining the position of the dental technician in dental practice.

In some countries this has not yet been done.

It is obvious that the enormous technical advances which have taken place and which are still going on make great demands on the men in the laboratory. It is essential that there be close co-operation between a well qualified dentist and a trained and experienced technician.

To achieve this essential the technician should not only be trained in his craft but have sufficient knowledge to enable him to understand the dentist's professional terminology. The dentist, on the other hand, should also be qualified to judge and supervise the work in the laboratory".

Dr. Sällström after reviewing the training of the dental technician in many parts of the world and more especially in Sweden, con-

cludes: "I believe that if a uniform standard of training for dental technicians is to become a fact it can only be done by giving that instruction in training schools enjoying a high reputation and under state control. These schools should be superintended by dentists and instruction as far as possible by dentists."

The profession of the dental technician should not as in most countries, be placed under the jurisdiction of the laws and regulations pertaining to trades and crafts but should be placed in the medical sphere and supervised by the highest medical authority.

The standpoint of the F.D.I. as regards *Dental Laboratory Technician* was first defined in a Resolution adopted by the General Assembly in Rome in 1957, which stressed the fact that the insertion of a prosthetic appliance is an action which presupposes medical and dental knowledge and experience and is therefore reserved for members of the medical and dental professions who have been trained for this, that is to say first and foremost, the dentists. The Dental Laboratory Technician has always been the indispensable collaborator of the dentist so long as he carried out the construction of prosthetic appliances in the laboratory according to instructions given by the dentist.

This resolution was supplemented in Dublin in 1960 by a policy statement which again stresses that the actual practice of dentistry should be limited to fully trained and qualified members of the dental profession but advocates the establishment of formal training courses on the vocational level to improve the educational and economic status of the Dental Laboratory Technician.

In view of the fact that the dental laboratory technicians are trying to increase their influence at an international level by means of an International Association of Dental Laboratory Technicians, the Federation's Regional Commission for Europe has requested the F.D.I. to re-examine the situation and give all national Dental Associations its support in the struggle against the activities of this particular group.

It is the writer's opinion that whilst the principles laid down by the Federation regarding dental laboratory technicians are basically sound, it should be recognised that they can only be applied in countries where the practice of dentistry has evolved to pro-

vide a sufficient number of well trained dentists and their auxiliaries to supply a dental health service. In the less well developed countries, auxiliaries are playing a very important part in public health services and these include the Dental Laboratory Technician who is being called upon to provide a wider range of service than the principles laid down by the Federation allow.

We now come to auxiliary personnel giving curative care.

The New Zealand type of Dental nurse and the Dental (Oral) Hygienist: I think it will be agreed that the general principles of prevention in dentistry must aim at increasing the resistance of the individual, especially the child, to dental caries and periodontal disease. This means educating the community and the individuals in it to the value and use of proper living conditions, which allow for adequate personal hygiene, sound nutrition, correct prophylactic measures and early dental treatment when necessary.

The dental profession must therefore supply a health service which will include:

(a) Health education of the community, especially teachers, parents and children, on matters of nutrition and oral hygiene.

(b) The provision of preventive services.

(c) The provision of treatment services.

Such a health service requires adequate finance and manpower and the correct control of education to supply a sufficient number of properly trained personnel to form the dental team who will provide such a service.

The foundation of such a dental health service is the well-trained dentist who practices either in a private capacity for fees paid by the patient, or as part of an organised service with payment from the state or philanthropic, industrial, insurance, or union organisations. In either case it has been conclusively shown that the average dental surgeon is not adequately trained to educate the community in such subjects as nutrition and environmental hygiene and that dentists with post-graduate training and experience in public health, and therefore capable of carrying out such functions, are not sufficient in number and their use for these purposes would be expensive and uneconomical.

There is no doubt that auxiliary personnel such as the New Zealand type of dental nurse and the dental hygienist could assist the

dentist in supplying these health, educational, prophylactic and therapeutic services.

I have made an international survey of dental auxiliaries through the medium of a questionnaire sent to all national dental associations affiliated to the F.D.I.

The questionnaire was sent to 52 countries, including Australia, and replies were received from 24 countries (Australia did not reply).

Presumably the 28 countries who did not reply are not interested in the use of auxiliary dental services.

A summary of the replies provides much interesting information. As would be expected, all the countries replying make use to a greater or lesser degree of dental assistants and dental laboratory technicians, whom I have already spoken about.

New Zealand which developed the category of auxiliary personnel universally known as "New Zealand Dental Nurses" has trained over 970 of this class of auxiliary worker and the aim is to graduate 200 nurses annually. This type of auxiliary Dental Nurse has spread to Malaya where a splendid service is provided by dental nurses trained at the Dental Nurses School of the General Hospital in Penang. Similarly in Ceylon the treatment of children is provided by dental nurses at their School for Dental Nurses and at 31 School Dental Clinics.

In the United Kingdom in 1957, the British Privy Council requested that the General Dental Council carry out an experimental scheme for the training and employment of dental auxiliaries. The object of the experiment is to enable the value of dental auxiliaries to the community to be judged.

A summary of the General Dental Council's interim report follows: "The Council have established a School for Dental Auxiliaries at New Cross, London, S.E.14., at which young women from all parts of the United Kingdom are trained, in a two-year course, to carry out the following treatment of school children and pre-school children under the supervision of a registered dentist:

- (a) simple dental fillings;
 - (b) extraction of deciduous teeth under local infiltration anaesthesia;
 - (c) scaling, cleaning and polishing teeth;
 - (d) topical application of sodium or stannous fluoride;
- and to undertake dental health education.

The clinical training of student dental auxiliaries is carried out during the second year of their course in the Children's Dental Clinic which forms part of the school, and for which the patients are drawn mainly from London County Council Schools.

The school has places for sixty students a year. The first course started in the autumn of 1960. Of the first intake, fifty-eight completed the course and passed their final examination, fifty in July 1962, and eight in the second attempt in December, 1962.

In September 1923 the American Dental Hygienists' Association was organised in Cleveland, Ohio. By 1927 the membership of the A.D.H.A. rose to 467, by 1932 it was 1,000 from 23 affiliated States.

Last September, 1963, dental hygiene programmes existed in 48 schools or colleges in the United States, 27 of them connected with dental schools out of a possible 49 dental schools. The remainder were attached to community colleges—their courses being accredited by the Council on Dental Education of the American Dental Association. The present ratio of dental hygienists to dentists in the United States is about 1:8 i.e. approximately 8,000 hygienists. The current graduating rate is about 1,200 per annum, but this has increased markedly since June 1964. The current membership of the A.D.H.A. is in the region of 4,500.

This short historical review shows how the dental hygienist as an auxiliary service originated and developed in the United States. Now I want to review the Dental Hygienist Auxiliary Service as it has developed internationally.

Those countries which make use of the dental hygienist are: Canada, India, Japan, the United Kingdom, Uruguay and the United States of America.

In this connection it is of interest to note that discussions are going on between the dental profession and their governments in the Netherlands, Sweden and Switzerland regarding the development of the dental hygienist as an auxiliary service, and that a school for dental hygienists was opened in 1951/52 in the Philippines but was closed through lack of students.

In those countries where the dental hygienists are employed their duties cover:

- (a) Dental health education in groups, individuals and schools with special reference to nutrition and oral hygiene.

(b) Examination of children and adults for dental defects requiring treatment by a dentist.

(c) Topical application of prophylactic solutions to the teeth for caries control.

(d) Scaling and polishing teeth i.e.

(i) Removal of tartar, deposits and accretions and stains from those parts of the teeth which are exposed or directly beneath the free margin of the gum.

(ii) Removal of all plaque from the teeth.

(iii) Application of the appropriate medicaments to carry out (i) and (ii) above.
(Scaling, polishing and removal of plaque).

(e) Taking and processing of dental radiographs.

(f) Administering first aid.

The hygienist carries out all her duties either in private practice or in public health service under the direction and close supervision of a dentist.

The training of a dental hygienist varies from nine months in the United Kingdom to two years in the U.S.A. where it is possible to take a four-year course for a higher qualification.

A typical curriculum for dental hygienists would include:

Theoretical:

1. Basic instruction on the structure and functions of the human body with emphasis on the oral cavity.

2. A special study of the masticatory apparatus and its supporting structure, to include macroscopic and microscopic aspects of the teeth.

3. A study of dental caries, its prevention and control to include the basic principles of chemistry and bacteriology as a foundation of such a study.

4. A study of the common diseases of the mouth, their prevention and control.

5. A study of the principles of public health as they relate to hygiene, dental health, nutrition, sociology and economics.

6. A study of psychology and public relations.

7. A study of dental health education methods for use in schools and dental health centres with emphasis on materials and

audio-visual aids, records and follow-up procedures.

The practical and clinical course should include:

8. The clinical practice of oral prophylaxis—topical application of medicaments and chairside instruction of the patient in dental health principles, including the use of the toothbrush.

9. A course on dental equipment, instruments and sterilisation.

10. A study of the main materials used by a dentist with reference to their therapeutic and preventive effects.

11. A course in radiology—the taking, developing and mounting of dental X-rays.

12. A course in first aid and personal hygiene.

I would strongly recommend to all interested in dental hygiene the text book "Clinical Dental Hygiene", 2nd edition, by Shailer Peterson, Dean and Professor of General Dentistry, University of Tennessee College of Dentistry.

There is *opposition* by the dental profession in many parts of the world to the introduction of dental hygienists as an auxiliary service. This is mainly based on:

1. The fear that the acceptance and use of the dental hygienist might influence the introduction of other forms of auxiliary service leading to further dilution of the dental profession, e.g.

(a) The New Zealand type dental nurse trained to treat children's teeth by fillings, extractions, etc.

(b) The "denturist", a dental technician authorised to work in the mouth.

(c) The dental therapist in the Armed Forces in Canada.

My answer to the argument of two-level dentistry, dilution, etc., is why not? We accept "two-level dentistry" every time we refer work to a specialist, and as for dilution the time to talk about this is when there are enough qualified dentists to satisfy the demands of dental health, let alone the need amongst the people of the world.

2. In countries where there is private practice, it is claimed that the establishment of auxiliaries in public health dental clinics will make inroads into the scope and volume of private practice.

3. The argument is also put forward that it would be better to train more dentists rather than to spend time and money on training dental hygienists.

4. The fear that the introduction of dental hygienists with an inferior educational background would lower the status of the dental profession.

There are many countries in the world where it has taken years of effort with difficult legislation to make the practice of dentistry by semi-skilled and unqualified persons illegal; e.g. Great Britain with its 1921 Act and Germany with its Act of 1952 which abolished the "Dentisten".

Organised dentistry in many of the countries where such legislation has been established has resolutely turned its face against dental hygienists; e.g. Germany. In other countries the profession is half-hearted and does not fully support the use of the hygienist; i.e. the United Kingdom. In the U.S.A. how ever it is evident that such a service is encouraged and fully supported.

In the U.S.A. and Canada there is a definite tendency to experiment with the broadening of the training course of the dental hygienist, in accordance no doubt with the recommendation of the commission on the Survey of Dentistry in the United States under the heading "Productivity in Dental Practice".

In this connection it is interesting to note that the American Association of Dental Schools has reaffirmed its support of expanded experimentation on effective training and utilisation of dental auxiliaries.

The AADS at its recent annual session in Los Angeles, March 1964, adopted a Resolution urging expansion of such training programmes "as a major contribution to the solution of the dental manpower problem." AADS House of Delegates also urged the U.S. Public Health Service to support experimental programmes designed to explore the most effective means for the training of teachers for dental assistant training programmes.

An experimental programme for the education of auxiliary personnel instituted at the University of Pittsburgh consists of a continual curriculum in which the graduates are educated not only as dental assistants but also as dental hygienists.

It should be noted that in countries where the dental hygienist has been accepted by the dental profession and receives training, she is

also protected by registration which controls her standards of education, examination, range of practice and discipline. These are privileges granted to an accepted auxiliary professional service and are jealously guarded by the national dental hygienist organisation which exists in great strength as you have heard in the U.S.A.; to a lesser extent in the United Kingdom, and is only starting in Canada.

It is of great interest to note the difference in thinking between the older dentist in the United Kingdom and elsewhere in Europe who for the most part will not accept the dental hygienist and the dental student of today.

In a memorandum circulated by the British Dental Students' Association on the "Fate of the Profession and Teaching", the following paragraphs are included:—

1. There is an apparent shortage of dental surgeons to meet the requirements of the nation.

2. Dental surgeons are not able to fulfil the potentials of their training. They are pre-occupied with routine treatment that could be done by personnel who are highly qualified in the simple techniques. This would free the dentists to use their extensive training more fully to the benefit of the community.

3. To cope with the simpler fillings and treatment, an extension is suggested of the auxiliary services, such as hygienists and ancillary workers.

4. The training of technicians, nurses and auxiliary workers should be associated with the training of dental surgeons, i.e. in the same hospitals and schools.

5. We envisage units or group-practice being formed with a dental surgeon(s) in charge of diagnosing and planning treatment and allocating it as required to ancillaries. The dental surgeon would do the more advanced and complex work, improving the range and quality and providing a better service for the public.

This is interesting thinking indeed, coming as it does from students.

I could not do better than conclude this paper by quoting Dr. H. Hillenbrand, Secretary of the American Dental Association, who at a conference on the utilisation and Training of Dental Assistants, said:

"1. A real or alleged shortage of dental personnel, or a mal-distribution of dental personnel, tends to focus the attention of the public and of government at various levels

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on the real or alleged unavailability of dental service for some segment of the population.

2. The acceptance by an increasing number of citizens of the fact that dentistry is an essential part of a total health service and that dental care is no longer an optional benefit but one which must be included as an integral part of an ever increasing standard of life. Over the years the dental profession itself has taken the major role in promoting these concepts, and it is now being asked to make them a reality for more of the citizens of the country.

3. Both of the factors just mentioned, as well as many others, have made health into a major political issue in many countries.

The inevitable expansion of social security systems has created a demand for more sophisticated health benefits and dental care is taking its place as one of these expanded benefits.

There can be no question but that the dental profession will need to make important decisions in the not too distant future, in regard to its auxiliary personnel. These decisions should not be made under public or political pressure, but the only way to forestall such an eventuality is to have a profession armed with information and program".

Auxiliary dental services are being introduced in almost all of the developing countries of the world, and it is also of interest to note that there is renewed interest being shown in many of the older countries in Europe.

I speak from experience when I tell you that in addition to the dental assistant and dental laboratory technician, the dental hygienist does magnificent work and is proving herself an invaluable adjunct to rendering a good dental health service. She is in my opinion here to stay and should be encouraged by the dental profession in all countries.

The dental team ideally consisting of the dentist together with the dental assistant, dental laboratory technician and where practical either or both the New Zealand type dental nurse and the dental (oral) hygienist will thus help in the fulfilment of the stated objective of the World Health Organisation subscribed to by 120 world states, namely the enjoyment of the highest attainable standard of health (which) is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.

The Role of The Health Visitor in Dental Health

E. H. SIMMONDS

*Area Superintendent Health Visitor,
Bletchley Child Welfare Centre and Clinic,
Bucks.*

FROM experience gained in hospital and in the outside field of medicine it has become obvious that the work of the Health Visitor is not widely known to her professional colleagues. This was borne out at a recent meeting held to discuss the possibility of introducing G.P./H.V. liaison. Not all the doctors concerned could visualise the system and what to expect of it. Although most of them had come into contact with the health visitor in the course of her daily duties, few were familiar with the extent of her work. Therefore I make no apology for presenting a brief account of the training of the health visitor before confining myself to her role in dental health education.

Many changes have been made since the health visitor service was established in 1862. Until a few years ago, candidates for the Health Visitor Certificate had to have general nursing and midwifery qualifications. Duration of training in Public Health was of six months. This was extended to an academic year in 1951. A recent system is the integrated four year course offered at University and Hospital, final qualifications being S.R.N. Certificate, midwifery experience and Health Visitor's Certificate.

Governing Body

This was The Royal Society of Health until the recent appointment of the Council for the Training of Health Visitors.
Latest Syllabus

- 1 .Development of the Individual
2. Individual in the Group
3. Development of Social Policy
4. Aspects of Disease
5. Principles and practice of health visiting, of which health education is an important part.

Education

Health visitors' work is preventive medicine in all its aspects. She is employed by the Local Authority under the M.O.H. Teaching duties bring her into contact with similar disciplines, sometimes working side by side, sometimes co-operating. Not the least of these is the sphere of dental health education.

What is the health visitor's contribution to it and how does she operate? She may have direct contact with every age group, teaching by formal talk, but more often by group discussion, making use of visual aids, posters, leaflets, flannel graph films or film strips to *augment* but not *replace* the personal teaching.

Application

As in all other spheres, practical application of health education varies with each Local Authority; therefore my experience is limited to the authorities of which I have personal knowledge. The aims are, nevertheless, the same.

Group Teaching

1. *Ante-natal Class.* This is perhaps the most important, and certainly the most receptive of all the groups to which health education is directed. The expectant mother is the home teacher of the future. Contents of programme include diet with particular stress on its effect on the growing embryo. Advice is also given on ante-natal and post-natal care of teeth and dental facilities.

2. *Mothercraft.* Advice is given on feeding, with special mention of the mechanics, e.g. (a) suckling encourages correct development of lower jaws, (b) *dangers of dummies*, especially if smeared with sweet stuffs leaving a residue on the teeth and gums, (c) *Chewing*, encouraged with crusts, apple, etc., and teething aids such as rings, bones, rusks and Bickipegs.

3. *Toddlers' Clinic.* Annual health check with dental service offered when possible. "Tooth drill" and visits to dentist when mother has routine check emphasised at clinic and during home visits.

4. *School children.* Routine termly health check with personal talk and encouragement.

Special visits to show film strips or flannel graph.

5. *Mothers' Clubs.* Talks and discussions touching all aspects of dental health are useful, growth of sound teeth, dental hygiene for all ages, regular visits to dentist stressed. All methods of teaching and the whole range of visual aids can be used in this group.

6. *Co-operation.* Where the dental clinic is situated in the same building as the Child Welfare Clinic, close co-operation can result as mentioned in toddler health check. Also by discussion of health visitor, dentist and dental nurse re home background and special instructions following treatment to school children or ante-natal mothers. Talks to school children immediately prior to school dental inspection link the two services together.

Other Media

Exhibitions: health visitor helping to construct and assemble visual aids and attending as part of the team to give advice to the general public.

Fluoridation of water, supporting local policy and answering queries from the public during the carrying out of general duties.

Visual Aids

The following are examples of visual aids:
Leaflets: Dental Health in Infancy and Childhood.

Twenty Questions.

Sound Teeth mean Good Health and Good Looks.

The Story of a Tooth.

Brushing your Teeth.

Questions and Answers on Tooth Care.

Caring for a Teenager's Teeth.

The Right Way to use Your Toothbrush.

Various posters: Selected for suitability to age group.

Film Strips: The Use of a Tooth Brush.

Billy Meets Tommy Tooth.

Care of our Teeth.

Dental Care.

Films: No Tooth Ache for Eskimos.

No Tooth Ache for Noddy.

Where There's a Will.

Tooth in Time.

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Causes of Failure in treatment of Localised Pocketing*

FAILURES in the treatment of localised periodontal pockets may be attributable to problems associated with diagnosis or features in the therapeutic procedures (Table 1).

DIAGNOSTIC PROBLEMS

The pathogenesis of localised periodontal pockets is uncertain. Rarely are many found in one mouth and their distribution is often characteristic. Sometimes they are associated with all four permanent first molar teeth and also some incisors. On such occasions a diagnosis of periodontitis complex is usually made and it is believed that the pockets are caused by inflammatory destruction superimposed on the condition of periodontitis which seems to have this strange predilection for the periodontal tissues of these particular teeth.

On other occasions the associated tooth is being heavily stressed during some phase of the mandibular excursions. In these circumstances there is often a history of abscess formation, but the typical symptoms may not have been experienced. This does not necessarily mean that no abscess has formed. Indeed, the very fact that a localised pocket is found rather than a sinus on the attached gingiva may be the reason why a swelling has never been present?

There are occasions, however, when the situation of a localised pocket is neither typical of periodontitis complex nor is it associated with a heavily stressed tooth. This does not, of course, rule out the possibility that the destruction is still the result of an abscess pointing in the gingival crevice or in an already existing pocket.

The pathogenesis of the localised periodontal pocket is ill understood and this lack of appreciation must be regarded as a major cause of failure in treatment. Whenever the causative factor of any disease or condition cannot be found then treatment must be somewhat empirical and this reduces the chances of success.

THERAPEUTIC FEATURES

The prime object of any treatment must be arrest of the disease process. Once this is achieved some degree of success can be claimed, but where the lesion has been a destructive one a second object is present.

A. BRYAN WADE, M.Ch.D., F.D.S.R.C.S.
*Director, Department of Periodontology,
Royal Dental Hospital of London School of
Dental Surgery, University of London.*

This second phase of treatment is concerned with the restoration of maximum function and the maintenance of health. Wherever possible it is preferable that these latter objects should be achieved by natural rather than artificial means and resort to a prosthesis must be rated in the lower orders of success.

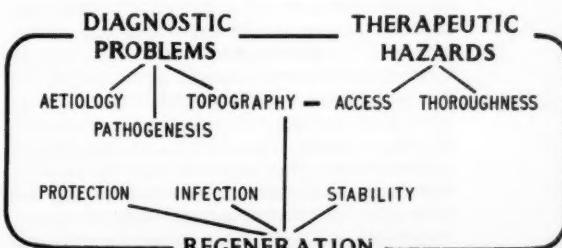
As the localised periodontal pocket is the product of tissue destruction for a high success rating there must be regeneration of tissue. It is here that an extremely difficult problem is encountered.

METHODS OF TREATMENT

Extraction.—The simplest and surest way of eliminating a localised periodontal pocket is to extract the associated tooth. Even where the aetiology and pathogenesis is not appreciated as in periodontitis complex, such treatment seems to eliminate the condition and there is no evidence to show that the alveolus does not heal in the same way and as fully as when a tooth associated with a more commonly found circumferential pocket is sacrificed.

As already stated such treatment, although effective in eliminating the condition, must be evaluated at a low level in view of its radical nature. It could be argued, however, that certainty of elimination is a feature strongly in favour of this form of treatment. If other teeth have not already been extracted, the construction of a bridge might well restore a high degree of function and there is much to commend such an approach in cases of periodontitis complex until knowledge concerning the extension of this condition is more definite. There are some who

Table 1. Summary of causes of failure in treatment of localised pockets.



believe that this condition limits itself to the periodontal tissues of the first molars and incisors of the permanent series, while others believe that it progressively involves the periodontia of all teeth and, naturally, some believe that either course of events may occur. Long term case reports of patients having periodontitis complex are surprisingly absent from the literature.

Osteoectomy.—Osteoectomy must be regarded as a form of treatment falling between the radical extraction and the conservative ideal of tissue regeneration. Where the associated tooth is stable and particularly when the site of the pocket is adjacent to an edentulous area it may be the method of choice. In performing the operation bone is exposed and direct access to the area permits thorough removal of all abnormal soft tissue, bevelling of the bone and trimming of the margins of the flap to ensure that the mucosal tissue is tightly apposed to the bone leaving no residual pocket.

In theory this should be a procedure ensuring a high degree of success. In practice certain operative hazards are encountered which militate against success. Frequently the pocket is associated with a posterior tooth and this fact, particularly when the pocket is on the distal aspect of the tooth, may make access difficult. Also the associated tooth may have tilted badly thereby creating a bad stagnation area where food tends to accumulate, particularly if a removable prosthesis is worn. Such tilting may also make close approximation of the mucosal tissue difficult as even when the tooth is in good position trimming of the edges of the flap to ensure a tight adaptation to the tooth is far from simple.

When the pocket is on the lingual or vestibular aspect of a multi-rooted tooth it usually involves the furcation as it may when situated mesially or distally to a two-rooted maxillary first premolar. Furcation involvement produces additional problems. Greatest success seems to be achieved by removing sufficient bone to permit cleansing. Most patients, however, seem to find difficulty in cleaning such areas and involvement of the furcation by a localised pocket must be regarded as a cause of failure in the treatment of these lesions. The chances of real success are so meagre that extraction of the associated tooth and, rarely, the resection of one root must be considered seriously.

A further complication of pocket elimination by osteoectomy is, of course, the relation

of the base of the pocket to the mucogingival junction. If after eliminating the pocket no zone of gingival tissue remains then a hopeless situation may exist. Vestibule deepening in the mandible may be feasible anteriorly though posteriorly and in the maxilla any significant deepening is rarely possible. Preservation and apical repositioning of the gingival tissue, which is practical when pockets are generalised, may be impractical when they are localised.

Curettage.—There is little doubt that the ideal form of treatment for a localised periodontal pocket is one which will produce regeneration of the destroyed tissues so restoring the periodontium to its former state.

Complete regeneration of the tissues seems to be a utopic ideal. In a review of 157 localised pockets treated by curettage at open operation it was shown that a mean depth of 8.0 mm. before operation was converted into 3.6 mm. after the operation (Wade, 1962). This improvement had been well maintained as evidenced by interim reports (Wade, 1958 and 1960). Even though the amount of pocket reduction was gratifying not all of the mean reduction of 4.4 mm. was attributable to tissue regeneration resulting in a new attachment. It appeared that such regeneration accounted for 3.0 mm. and the remaining 1.4 mm. was the result of shrinkage of the marginal gingival tissue.

The reasons for what can only be regarded as partial success must be sought. To do this it might be wise to examine the four cases which resulted in complete failure as judged by the fact that the teeth had to be extracted. These teeth were in the mouths of three patients aged 17, 28 and 43 years of whom two were male and one female.

Three of the teeth were posteriors, a maxillary first molar and mandibular first and second molars (Figs. 1 and 2). All were on the right side. Furcation involvement was present in all three and in two the radiographic appearance suggested periapical involvement. In each case only one or two sutures had been inserted in the line of the vertical incision in the gingiva and none interdentally to approximate the lingual and buccal papillae. No post-operative protection had been applied in any case. Other features not common to all three cases were excessive width of pocket from cementum to bone, excessive circumferential width and the reflection of both buccal and lingual flaps. In two of the three cases there was an initially satis-

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Fig. 1. Mandibular right first molar with bifurcation involvement and periapical involvement which was unsuccessfully treated partly due to poor diagnosis and inadequate treatment.



Fig. 2. Mandibular right second molar with extensive bone destruction probably involving periapical and furcation areas

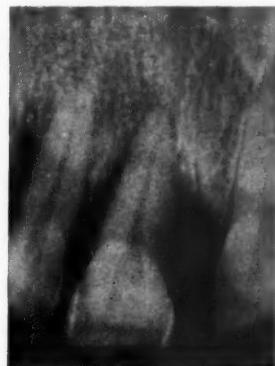


Fig. 3. Maxillary right lateral incisor with extensive bone destruction associated with the pointing of a periapical abscess not readily apparent radiographically but demonstrating need for vitality tests.

factory phase for about two months before the recurrence of an abscess. Two teeth were in the same mouth and the operations were performed by less experienced members of staff.

The fourth tooth was a maxillary right lateral incisor associated with a periapical abscess, which had produced an 11 mm. pocket by pointing in the gingival crevice on the distal aspect of the tooth (Fig. 3). Although the operation was combined with root canal therapy, periapical curettage and apicectomy, there was an accumulation of pus periapically at 16 days after operation. In spite of this, reattachment appeared to have occurred on the lateral aspect of the tooth for neither could pus be expressed marginally nor did a probe inserted into the gingival crevice communicate with the abscess.

Four cases is far too small a number from which to draw positive conclusions, but the features common to three of the cases suggest that complexities of pocket configuration such as involvement of the furcation, the situation and the proportions of the pocket may make efficient operating more difficult. They also suggest that assessment of pulpal vitality is a wise pre-operative precaution. Efficient suturing to get good approximation of the gingivae is probably significant, and post-operative protection may be beneficial but the need for this provided there is good adaptation of the flap must be questioned (Wade, 1962).

Such are the conclusions which can be made from an analysis of this small number of failures. Other causes of failure may be discussed on a more hypothetical basis. These considerations may be divided into those associated with complete elimination of abnormal tissue and those concerned with the regeneration of new tissue.

Efficient removal of unhealthy soft connective tissue and thorough planing of cementum does not usually present major hazards though it may when the pocket is tortuous or there is little space between the cementum and bone. The principal difficulty would seem to be elimination of all the epithelial lining from the pocket. Its removal is essentially empirical and may be carried out in several ways. When there has been considerable proliferation either a reverse bevel approach (Nabers, 1957) or skimming the deep aspect of the reflected flap probably brings about effective elimination, but when the gingival tissue is already thin elimination of pocket epithelium presents many prob-

lems. This may be a reason why new attachment in the suprabony part of a pocket does not appear to occur so readily as in the infrabony part.

Problems associated with the actual regeneration of tissue may well be related to the topography of the bony defect. Goldman and Cohen (1958) classified infrabony pockets according to the number of bony walls present. It seems highly probable that the greater the number of walls the better are the prospects of regeneration, at least to the periphery of the bony margin. A defect of this type is not unlike a cyst cavity and these usually fill in given time, provided that the cyst is enucleated or marsupialized. Although a limited amount of creeping attachment can almost certainly occur, it seems unlikely that any significant amount of bone can be deposited coronally from the crest of the bone. It must be postulated that the fewer the number of bony walls the poorer the prospects of obtaining much regeneration and new attachment. An insufficient number of bony walls should be regarded as a pertinent cause of failure in many attempted treatments of localised periodontal pockets.

Disturbance of the blood clot may also be a cause of failure. Good adaptation and suturing of the flap, as already suggested, together with post-operative protection may reduce the number of failures from this cause.

Subsequent infection of the site may be a further cause of failure. Both Carranza (1954) and Cross (1955a) have emphasised the prophylactic advantage of systemic penicillin in reducing the possibilities of this happening.

Gross movement of the associated tooth would seem to be undesirable and failure to splint may on some occasions be the reason for a poor result.

Removal of a marginal strip of gingival tissue has been advised by many with the object of handicapping the epithelium in any attempt to grow apically to reline the pocket. Jansen Copes and Verdenius (1955) concluded from animal experimentation that the problem was not a race between cemental deposition and epithelial proliferation. Blass and Lite (1959) showed that connective tissue regeneration starts as early as 12 hours after curettage and Wade (1962) in his evaluation of treated cases where no marginal strip had been removed showed a reasonable degree of success.

SUMMARY

It would seem that the causes of failure in the treatment of localised periodontal pockets may be attributable to inadequate understanding of the pathogenesis of the lesion or poor diagnosis. In either case elimination of the aetiological factor will be a matter of chance.

Secondly, failure may be associated with operative hazards or a poor standard of operative ability. Complete removal of epithelium is difficult, while access, particularly in the posterior regions of the mouth, may be so limited that the deeper parts of the pocket are inadequately curetted.

Assuming success in diagnosis and efficient operating, the third cause of failure is associated with the ability of the tissues to regenerate. This is probably dependent upon the extent to which the pocket is infrabony and bounded by walls of calcified tissue as suprabony reattachment does not occur readily. Implantation of bone (Cross, 1955b, and Kromer, 1962) or cartilage (Held and Spirgi, 1960) may help where the defect is wide or there is a reduction in the number of bony walls.

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* A paper read at a Periodontal Symposium held at the Eastman Dental Hospital on 6th and 7th July, 1964.

ASSOCIATION NEWS

A RECORD number of members attended the Annual General Meeting at the Eastman Dental Hospital on Saturday, October 24th, to hear Dr. S. Cripps give a paper entitled "Cinderella of Dentistry". A synopsis of this talk appears on page 15.

Election of Officers and Members

The following members were elected for the ensuing year.

Chairman: Mrs. M. Ferry
Secretary: Miss G. M. Chalmers
Treasurer: Mrs. W. Leech

Members of the Council

Miss J. R. Elliot Miss D. B. Jenkins
Miss K. Griffiths Miss J. Missing

Appointments Officer

Following the resignation of Pilot Officer C. Roberts, Miss M. Magdaburg was elected appointments officer. Members seeking posts should contact her at 93a Courtlands Drive, Watford, Herts.

Assistant Secretary

As the Association grows so the work of the Secretary increases, it was decided therefore to appoint an Assistant Secretary and this post has been filled by Miss D. Jenkins.

General Dental Council

The General Dental Council have asked us to bring your attention to a new film strip sponsored by the Fruit Producers' Council in collaboration with the British Dental Association and the General Dental Council. The filmstrip is in Eastman colour, has forty-five frames and is accompanied by full teaching notes bound in loose leaf form. It shows the various ways in which animals teeth are adapted to the food they eat and compares them with human teeth. It is suitable for children between the ages of twelve and sixteen.

Courses in Dental Radiography

Kodak Limited are to hold a series of one-day dental radiography courses on March 22nd, May 10th, July 12th, October 25th, and November 22nd.

The day's course begins at 9.30 a.m., with a morning session devoted to the nature and properties of X-rays., the theory of positioning, the construction and use of X-ray films, processing of films and a discussion of the various faults which can occur. A practical session is held in the afternoon which finishes at approximately 4.30 p.m.

It is held in the Medical Sales Division, 6th Floor, Kodak House, Kingsway, London, W.C.2. Any enquiries should be addressed to Mr. B. D. Tutt at that address.

"Why Teeth are Interesting"

This is the title of the latest booklet published by the General Dental Council. It is intended mainly for boys between the ages of twelve and sixteen. Attractively produced in colour it has a wide variety of illustrations depicting all types of animal and human dentition. Free of charge to schools, training colleges, youth clubs and dental practitioners. To local authorities it will be sold at 3d. a copy with a reduction for quantity.

Edinburgh

We were pleased to receive the following report from Miss N. Clemson, Tutor Hygienist at Edinburgh School of Oral Hygiene.

Our school, commonly referred to as "over the road", is opposite the main hospital building. It is a neat conversion from an

RECOMMENDATIONS OF THE ASSOCIATION FOR MEMBERS ACCEPTING EMPLOYMENT IN PRIVATE PRACTICE:

Salary: For a 38-hour week—£16. 10s. 0d. per week. On sessional basis: £2.5s. 0d. per 3-hour session for any additional overtime: 15s. per hour.

Annual Leave: minimum 2 weeks with pay after 1 year minimum 3 weeks with pay after 2 years.

Indian restaurant into a classroom, students' common room and office. Although it is small it has been well planned to use the available space to full advantage. The classroom has six work-benches containing storage drawers, phantom head attachments and small dental engines. All lectures and preliminary operative work take place in the classroom. Patients are treated in the periodontal department of the main hospital building.

Scotland's first school of oral hygiene began on November 1st, 1963, when it was opened by the Chief Dental Officer for Scotland, Dr. J. W. Galloway. After the customary speeches and photographs, afternoon tea was held in the Dean's study. This was an exciting day for the first six students.

An even more exciting day was July 13th, when all six students passed their final examinations, and just as exciting for Mr. I. T. MacPhee and the tutors Miss M. Stanley and Mrs. N. Clemson. A ceremony was held to mark the occasion. Prizes were presented by Mrs. Galloway.

And so we said goodbye to our six students, well equipped with knowledge (we hope) and enthusiasm to join the hard working band of dental hygienists.

'Sylvia' SW. W. WX. ►

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Points From Letters

A vacancy occurs for a hygienist in the Shetland Isles and in recommending this post Mrs. Jean Irving of Lerwick, Shetland Isles, writes:—

"... The work I have been doing here has also been very different from anything I was used to. I do few scaling sessions because few of the patients who come to the clinic need scaling. Most of my time is spent in schools. We take all the schools in a small area and concentrate on these for a while. I hold a continuous small dental health campaign, travelling out each week, and each week presenting the material completely differently. At home I found I soon became bored with my work because I just repeated the same story to several groups of children each day. In Shetland I found it impossible to become bored. Each time I visited a school I talked of some different aspect of dental health and I also found the work far more rewarding because I saw some of its results, as well as getting to know the children very well. By regularly visiting the schools we hope to encourage the children to make oral hygiene a habit and to get the messages of dental health home to the parents—through the children. There is plenty of dental health material here and many people willing to help with new ideas. This work offers plenty of scope for a hygienist to use her own initiative and invent her own material. I found it took me quite a while to get used to this new way of thinking but once I did ideas were not slow in coming. I also get a chance to speak to the young mothers by attending the maternity ward of the hospital once a week and speaking to the mothers about their own and their children's teeth."

There is a great deal of work to be done in Shetland. Few of the adults have ever heard of dental health and they need the help to help their own children. The average Shetland child has very poor teeth, badly calcified to begin with but this is aggravated by a shocking diet. I think more 'fancies' (small cakes) and sweets are eaten here than anywhere else, and fruit is not eaten so much because it is expensive. The transporting of fruit and vegetables from Aberdeen to Shetland increases the price . . ."

Change of Address

Will members who wish the journal to be sent to an address other than the one on the current list supplied by the Association please notify Miss Rosemary Flynn, 53 Paddington Street, London, W.1.

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"THE CINDERELLA OF DENTISTRY"

A synopsis of the paper read by Dr. S. Cripps at the A.G.M.

THE most depressing factor of the periodontal syndrome is the general unawareness of its existence. The cardinal changes in the soft tissue which mirror and foreshadow pathological involvement in the deeper concealed areas, although obvious to the naked eye, interest the few rather than the many. Some day the profession will realise that an incipient gum condition is just as vital as a carious tooth.

Many factors conspire to produce a periodontal condition but it is the *meticulous* scaling of the teeth that is the most important and telling operation in combating this disease. It is in the field of prevention rather than cure that the scaler, the curet and the file make their greatest contribution.

There are two very important points in scaling. One is instrument sharpening. A snap check on cutting edges would find a large number without a bite. Tungsten carbide has solved the problem of the hoe, but carbon steel, for fine scalers, needs frequent sharpening. It is futile to use a dull instrument that smooths rather than removes the elusive submarginal deposits that are practically welded to the tooth surface. The second point is the use of the magnifying loop. Scaling under magnification is very revealing. Although subgingival scaling is more a matter of touch and feel under the gingival cuff, rather than visibility, the blown-up field of operation makes for greater concentration and more accurate instrumentation.

Patient Education

Proficiency in the use of toothbrush and the wood-stick is not acquired overnight and far too little time is devoted to education at the chairside. Mass education and propaganda spread by the written word, radio and television, etc., is indispensable, but the most effective means of teaching a patient the rudiments of oral hygiene is in the chair with a large revealing mirror in front of him.

It becomes more apparent every day that the considerable task of changing the habits of a lifetime has been completely underestimated. For the vast majority of patients toothbrushing is a subconscious process. They go through the motions, often in a bad light, unaware of their unproductive labours. Having so-called brushed their teeth they

arrive for their appointment still carrying the remnants of several meals around the necks of their teeth. No one enjoys having his personal hygiene questioned or criticised, particularly if he has been trying to do his best. Reactions to correction vary with temperament, mood, and state of well being at the time of appointment. To achieve results one must be prepared to wage an endless campaign of prod, spur and goad. The customary few words of instruction at the end of a visit are quite ineffective.

The proper use of wood-sticks is not a simple task. Despite specific instructions, nine out of ten patients use it as a tooth pick. Repeated demonstrations should be given with the aid of a magnifying mirror. The procedure is divided into two parts. Initially, with knife edge facing outwards and the stick at an acute angle to the labial and cheek surfaces, the mesial and distal line angles of individual teeth are rubbed clean of all food debris. Following this technique, if contacts are tight and teeth are crowded, there is no necessity to try to force the stick through. If the point breaks off, which occurs frequently, it is cut off at an angle that still provides the user with a point. When the sides of all the buccal surfaces of the teeth have been rubbed clean, the second part of the operation consists of amputating the tip completely and vigorously rubbing the gingival third of the tooth as if one was deliberately trying to retract the base of the gingiva. A movement not unlike that of a manicurist pushing back a cuticle. This is a twofold action, it cleans the neck of the tooth and keratinises the gingival margin. Once the technique is acquired the patient may still fail to rub the tooth surface hard enough and he must be told that a piece of balsa wood cannot possibly damage the enamel which is the hardest substance in the body.

Without investing a very considerable amount of toil and trouble the communication of a new habit rarely penetrates the subconscious. Going through the motions can only evoke a similar reaction from the patient. He must register, otherwise it is a superficial impression which rubs off by the next visit. Patient education is one of the most frustrating and exhausting facets of prophylactic dentistry. It is a punishing pastime and one which demands a good deal of stamina, perseverance and, *above all* a passionate desire to raise the standard of oral hygiene.

NEWS FROM ABROAD



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Dentistry in Bulgaria

Dr. IVAN BONEV,
Sofia

The fight to prevent dental disease is waged throughout the world. Although the problem remains the same, methods and techniques vary from country to country; we are therefore particularly pleased to publish, in its original form, this paper received from Bulgaria—Editor.

DENTAL disorders produce a comparatively lighter effect on man's general health and are usually not accompanied by acute symptoms. People and even public health institutions are, therefore, apt to be somewhat negligent where dental care, therapy and prophylaxis are concerned. For this reason mainly, dental care is largely in private hands in most parts of the world. The same was true of Bulgaria some 20 years ago, when there was only a poorly developed system of dentist's surgeries in the country, unable to meet even the most elementary needs in this field. Up to 1944 there were only 83 public dentist's surgeries in the whole country, established under the social security programme, as well as a few dental surgeries at some departments, schools, etc. At the same time, 10 times more (about 800) private dentists practised their profession, in spite of which the problem of providing effective dental care for the population was far from adequately solved: in 1944 the average number of people per dentist was 7,000—an obviously quite unsatisfactory ratio. At the same time, the distribution of dentists in the country was such that only a small portion of the population was able to avail itself of their services. Most of the dentists lived in the towns (about two-thirds of them, one-third living in Sofia). The rural population, which at that time constituted about 80 per cent of the country's total population, was in fact almost deprived of prompt dental care.

It is quite natural that under the conditions prevailing prior to 1944 the belated dental treatment was ordinarily reduced to extractions. This meant that a great part of the population, and the rural population in particular, was deprived of its masticating apparatus, with all consequences arising therefrom for digestion, the cardio-vascular system, and people's health in general. Physical examinations held in 1944 to establish the condition of the teeth of 100,000 Bulgarian citizens belonging to different social categories, showed that more than half (59 per cent) of the examined industrial and office workers and

peasants had a defective masticating apparatus and were in need of various artificial dentures. This physical examination, the results of which illustrated the situation throughout the whole country, was indicative of the definitely low level and ineffectiveness of dental aid in former Bulgaria.

Dental care was radically improved in Bulgaria after the war, when the entire public health system was placed on new and sound foundations. The principles, on which the new stomatological system was built up, were the same as those on which the entire public health system in Bulgaria was organised after 1944: accessibility of the public health system to the whole population, free medical aid for the entire population without any discrimination, effective prevention, planned sanitation, etc. The system of dental surgeries grew at exceedingly rapid rates. Thus, in 1950 the number of public dentist's surgeries had already risen to 963 (as against 83 in 1944), 497 of which were located in the villages. In 1958 the dentist's surgeries numbered 2,356, of which 1,182 were in the villages, outstripping those in the towns, and in 1963 the total number of dentists and dentists' assistants rose to 2,876, most of whom worked in the countryside. In 1963 there was one dentist for every 2,800 inhabitants—which placed Bulgaria's dental aid system among the first in the world. According to the long-term programme, in 1980 there will be one dentist per 2,000 inhabitants and the approximate number of dentists holding public posts will be 4,650, i.e. until then there will be an annual increase of 100 in the total number of dentists. The number of dentists in Bulgaria in 1963 was 3,310, of whom 280 had private practice or no practice at all, and 2,710 held public posts. The 1944 ratio has been completely reversed.

The system of dental aid in Bulgaria today is under the central management and control of a special department at the Ministry of Public Health and Social Welfare. The ministry also supervises the Stomatological Department at the Medical School in Sofia

and the Stomatological Research Institute. The Stomatological Department was set up in 1942 as a department with three chairs at the Sofia Faculty of Medicine for a limited number of students. But the rapid development of the dental aid system called for greater numbers of dentists, as a result of which the stomatological department was gradually enlarged, until in 1951 it became an independent department. The number of graduates increased substantially and was sufficient to meet the need of dentists for the newly established posts in public health.

The Stomatological Department at the Sofia Medical School does not limit its activities to teaching, but does important research work, the results of which are published in many specialised local and foreign publications. Thus, in the field of dental surgery a great number of studies of maxillary and facial traumatology have been made in Bulgaria, experimental models of odontogenic osteomyelitis have been established, new methods of osteoplasty have been introduced, and so on. The chair in therapeutic stomatology has investigated exogenous and endogenous fluoridation, various methods of hygienic care of the oral cavity, the spread of caries and parodontitis in Bulgaria, the diagnosis and treatment of diseases of the dental pulp. New methods have been worked out and tested for the treatment of gingivitis, stomatitis, parodontitis, etc. The department of orthopaedic stomatology has worked on new methods of taking casts for whole sets of false teeth, many plastic materials have been investigated from a stomatological point of view, new technological methods have been introduced in the production of dental preparations, materials, etc. The Stomatological Research Institute set up in 1951 also helps in solving the scientific problems in the field of stomatology. Moreover, being the place where all dentists who are admitted to the Institute for Post-Graduate Specialisation and Improvement of Doctors actually study, a great number of dentists holding jobs in the dental aid system pass through it every year.

The stomatological aid system, which, in fact, operates in direct contact with the population, is under the immediate control of the districts on which it depends for its material and technical supplies and in which special district stomatological poly-clinics have been

established, or stomatological departments at the hospitals with more than 200 staffed beds (at the town hospitals, anti-tubercular, balneological and other sanatoria) with consulting dentists at the smaller hospital establishments. The chief doctor at the district stomatological clinic has the right to inspect the stomatological aid system in the whole district. Dental aid and prevention for industrial workers is secured by the dentists' surgeries attached to the respective industrial therapeutic and prophylactic network, and for children of pre-school and school age by the school dentists. The basic task of stomatological prevention is, in the first place, to protect the teeth of the population from caries or to nip caries in the bud, to combat parodontitis and so on. The surest method of achieving such a task is through a systematic, periodic examination of the teeth of children and teenagers, widespread fluoridation, tooth impregnation, oral hygiene, prophylaxis through proper diet, etc.

The making of partial or whole dentures, when inevitable, is entrusted to the dental laboratories, in each of which several hundreds of experienced technicians work today. At the same time possibilities have been created for the training of a greater number of dental technicians in view of the future growth of the system of dental aid. An eloquent proof of the efficient joint work done by the stomatological surgeries and these laboratories is the fact that in many regions of Bulgaria an approximately equal number of teeth as have been extracted during the year are restored by means of removable or permanent dentures.

With the respective approval of the higher public health bodies new methods and medicines can be offered, tested and introduced in stomatology, on some of which we shall briefly dwell. In this connection particular attention has been focused on the treatment of parodontitis, priority being given in the last few years to original medicines made of local raw materials. A complex treatment of parodontitis includes the recommended use of Bulgarian mineral waters in the form of filiform showers under pressure, as hydrogen sulphide inhalations, bathing in them or drinking them. One physiotherapeutic method of treating parodontitis is by means of an ultra high frequency field, combined with the use of d'Arsonval's apparatus, as well as

with the aid of ultra-sonic treatment, combined with some of the available medicines. The surgical insertion of Thymoplast paste into the interdental spaces has been recommended in the last few years; the paste is prepared with a polymer of acrylic plastics and thymol plasticised with eugenol, and is considered as a non-specific irritant. Some among the medicines made of local raw materials have scored remarkable successes. Such a medicine, for instance, is Polyminerol, consisting of salts and colloids of the natural lye of one of the seaside lagoon lakes; applied locally, it provokes a non-specific anti-inflammatory reaction, stimulates the phagocytose activity of the leucocytes and has a slightly anaesthetic effect. The Pomorin toothpaste, which meets all the requirements of the biology and pathology of the oral cavity and more particularly of its anti-biosis and immunobiology, has been produced on the same basis.

The Maraslavin preparation, which so far has produced the best results in the local treatment of parodontitis, is a combination of the drugs *Herba Artemisia pontica*, *Flores caryophyllorum*, *Herba Satureja hortensis*, *Fructus piper nigrum* with *Acetum purum*. As active substances this combination contains tannins, essential oils, acids, dyes and azulenes, as well as some alkaloids, glucosides, resins, salts, etc. Experimental tests of this medicine have shown that it possesses a considerable anti-inflammatory, anti-bacterial and vasoconstrictive effect when applied locally. Good, comparatively quick and lasting curative effects, X-ray controlled, have been obtained by the new Phytodont preparation (Anti-parodontol), which is also an extract and distillate of Bulgarian medicinal herbs, producing a local anaesthetic, anti-septic, and anti-inflammatory effect; it is applied in the form of a poultice, compress, by rinsing and massage, performed partly by the patient himself. This preparation produces results in all forms of parodontitis and gingivitis. In the treatment of parodontitis, successful experiments have lately been made with a local application of Bulgarian attar of roses and rose water of a definite composition. Attar of roses and its derivatives are used as medicinal preparations in other fields of medicine also. A study has been made of the leaves of *Digitalis lanata*, in a 20 per cent infusion, in treating catarrhal and hypertrophic gingivitis and haemorrhagic, supura-

tive and mixed parodontitis; a remarkable healing effect has been established in cases of catarrhal gingivitis and haemorrhagic parodontitis, which are wiped out 100 per cent in one course of treatment, whereas with the other forms the curative effect is not greater than 30 per cent. The healing effect of this infusion is attributed to the steroidal saponins contained in *Digitalis lanata*.

The interest of Bulgarian dentists is, of course, concentrated not only on parodontitis, but also on the remaining diseases of the teeth and the oral cavity. The application of basil oil (*Ol. ocimi basilici*) has been recommended, in cases of acute gingivostomatitis, for disinfection of the tooth cavities of vital teeth, as a pain-soothing means in cases of superficial injuries of the soft tissues in the oral cavity, as an effective means against feeling sick and vomiting during dental manipulations. A method of intra-alveolar adjustment of whole dentures in cases of pronounced atrophy of the alveolar crests has been proposed, by preparing artificial alveoles in the region of the canines by means of free skin transplantation. Far-reaching investigations of plastics have been undertaken with a view to becoming able to use them in orthodontistry. Among other things along this line there is a proposal for the introduction of a new phenoplast of the kind of the white bakelite resins, called Amelopak, composed of two liquids (a basic mixture and a catalyst), obtained from local raw materials with a comparatively simple and accessible technology. This substance has the valuable property that it can penetrate the necrotic sectors and the microdefects of enamel and grow hard in a short time, which makes possible its use as a highly efficient impregnating means in the prevention of caries. Hard plaster of Paris has also been obtained by an original method from local raw materials. For its basic properties and mechanical indices it is equal to the imported plaster of Paris or may even surpass it.

The brief enumeration of the above new methods and medicines in the field of stomatology, does not by any means cover all the achievements of Bulgarian dentists. Placed on a modern scientific basis and manifesting remarkable vitality, dentistry in Bulgaria has all the possibilities of developing and of making its contribution to the treasurehouse of world dentistry.

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